Volunteer Lake Assessment Program Individual Lake Reports

KATHERINE, LAKE, PIERMONT, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	525	**Max. Depth (m):**	6.4	**Flushing Rate (yr^{-1}):**	2.1
Surface Area (Ac.):	37	**Mean Depth (m):**	2.8	**P Retention Coef:**	0.63
Shore Length (m):	1,800	**Volume (m^3):**	494,500	**Elevation (ft):**	1339

TROPHIC CLASSIFICATION

Year	Trophic class
1985	OLIGOTROPHIC
2005	OLIGOTROPHIC

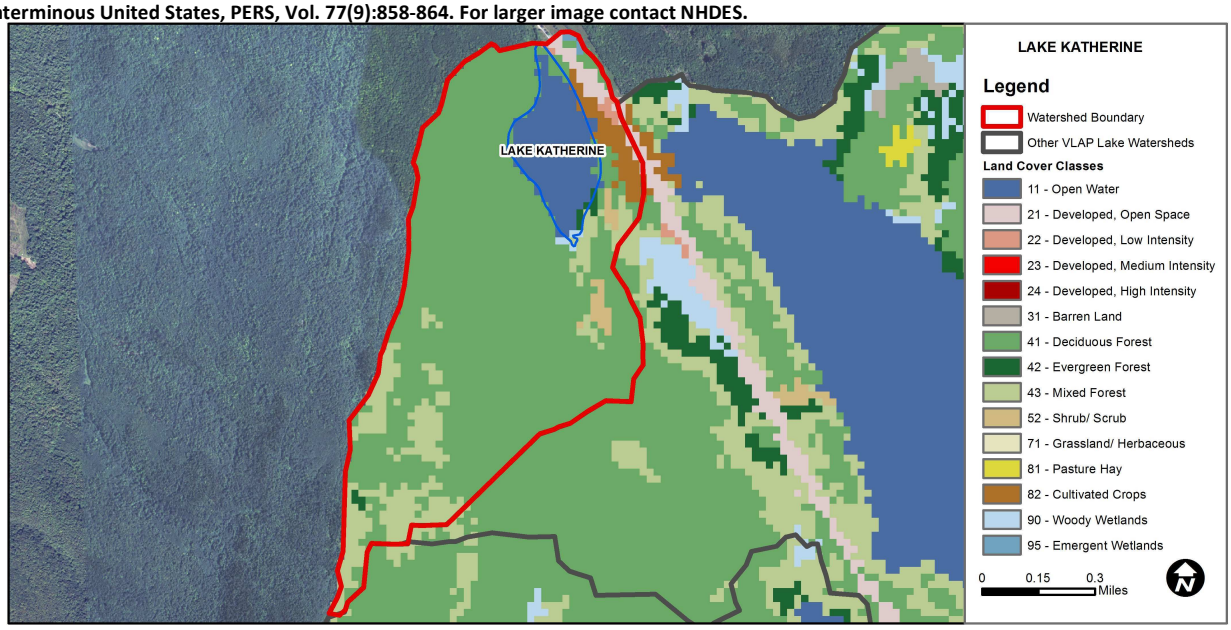
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.
	Oxygen, Dissolved	Very Good	There are a total of at least 10 samples with 0 exceedances of criteria.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.94	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	1.47	Deciduous Forest	71.96	Pasture Hay	0
Developed-Low Intensity	0.44	Evergreen Forest	0.59	Cultivated Crops	2.7
Developed-Medium Intensity	0	Mixed Forest	12.08	Woody Wetlands	0.25
Developed-High Intensity	0	Shrub-Scrub	1.23	Emergent Wetlands	0.2

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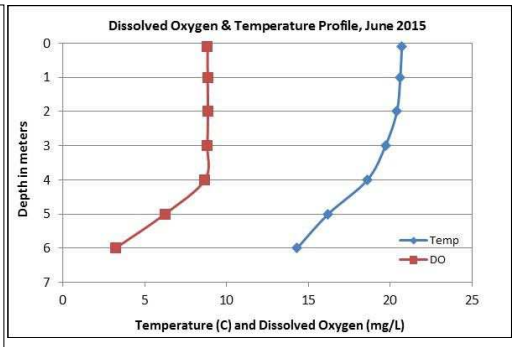
Katherine Lake, Piermont

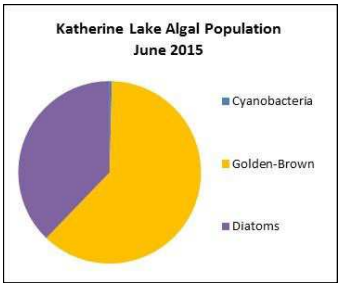
2015 Data Summary

Recommended Actions: Lake phosphorus and chlorophyll levels remained slightly elevated, and transparency remained low in 2015. Sample the lake at least twice during the summer to assess how water quality fluctuates from month to month. The boat access area has evidence of erosion due to stormwater runoff. Work with the owners of the boat access area to install stormwater controls to reduce stormwater runoff and erosion of sediments and nutrients to the lake. Keep up the great work!

Observations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels decreased from 2014 but remained slightly elevated and above average in June. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Epilimnetic (upper water layer) and hypolimnetic (lower water layer) conductivity levels were low and approximately equal to the state median. Historical trend analysis indicates stable epilimnetic conductivity since monitoring began.
- **Total Phosphorus:** Epilimnetic and hypolimnetic phosphorus levels remained above average in 2015. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years.
- **Transparency:** Transparency measured without the viewscope (NVS) remained below average for the lake in 2015. Historical trend analysis indicates relatively stable transparency with moderate variability between years. Transparency measured with the viewscope (VS) was much better than that measured without and likely a better representation of conditions.
- **Turbidity:** Epilimnetic and hypolimnetic turbidity remained elevated in 2015 likely due to algal growth.
- **pH:** Epilimnetic and hypolimnetic pH were within the desirable range 6.5-8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH since monitoring began.





Station Name	Table 1. 2015 Average Water Quality Data for KATHERINE LAKE							
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
					NVS	VS		
Epilimnion	6.2	4.34	41.1	9	3.25	4.25	1.67	6.87
Hypolimnion			41.2	14			1.71	6.69

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.